# SERVICING SYLVANIA "HALOLIGHT"

*This unique device can be serviced easily and quickly if you know how it works and what is likely to go wrong.*

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NOT infrequently, service technicians are inclined to shy away from troubles involving *Sylvania* "HaloLight." One reason, perhaps, is the abstract nature of this feature—divorced as it is from actual chassis operation. The "HaloLight" might be completely out of order, yet the set itself could be performing perfectly. A more probable reason, however, is the unfamiliarity of the average technician with this feature.

There is nothing mysterious about "HaloLight." A cold-cathode tube coated with special phosphors, it contains a closely-controlled mixture of argon and mercury. Gas pressure also is held within close limits. Strictly a gas tube, it does, however, exhibit characteristics somewhat unlike the familiar behavior of gaseous lighting.

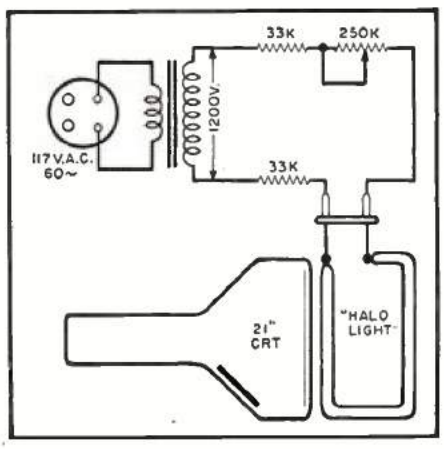
Fig. 1 shows the basic "HaloLight" circuit. Today, a potential of 1200 a.c. volts fires the lamp surrounding the 21" picture tube, while stable operation is maintained down to 900 volts, once the lamp is lit. This, in itself, is something of a feat. Before the development of "HaloLight," it was practically unheard of to operate such a long gas tube effectively on so low a voltage. As a matter of fact. to insure "HaloLight" stability, some of the earlier models were equipped with 2000-volt transformers, until the present lamp was designed.

The "HaloLight" tube, as manufactured today, has been in use ever since *Sylvania* introduced its first 21" TV receiver a number of years back. Therefore, in servicing "HaloLight," the technician will encounter 2000-volt transformers on all 17" and 20" sets, and a much smaller 1200-volt transformer on the 21" models. In the 24" receiver he will find a transformer delivering 1800 volts to the gas tube.

From a service standpoint, there are four main conditions confronting the technician. Once these defects are recognized, it is a simple matter to restore the unit to its proper level of performance.

If a lamp will not light, measure the voltage fed to its supply leads from the special socket in the power unit. Fig. 3 shows a "HaloLight" power unit, containing transformer, brightness control, and current-limiting resistors. If a potential of approximately 1200 volts is indicated (1800 volts for 24"), the transformer has not failed. Earlier models, of course, should measure about 2000 volts.

**Fig. 1. Diagram of the main elements of the Sylvania "HaloLight" system. The gas tube surrounds the outside of the CRT.**




With voltage apparently adequate, plug the chassis into a "Variac," or other source of 128 a.c. volts. If still no light results, the tube is defective and must be replaced. However, if the lamp should come on during this test, we must pause for a moment and take stock of the weather. On *Sylvania* receivers sold prior to the fall of 1954, hot and humid weather often brought a rash of complaints that the "HaloLight" would not start. Since that time, a transparent coating of special silicone has been applied to every lamp, and the trouble has ended. Consequently, if the TV set is located where the weather is often hot and humid, it will be necessary to remove the tube from its light-shield and brush on a thin coating of this special silicone, available at the company's service depots throughout the country.

Cold weather, also, causes starting difficulty. It's a fairly safe bet that no one would sit watching TV in a temperature below 50 degrees, but if he did, it is doubtful that the "HaloLight" would start. And if it did come on, it would flicker badly.

Flickering is another phenomenon which may draw complaints. It has been established that the silicone treatment also gives some relief here. But if the trouble persists even in normal, dry weather, chances are that the tube has aged and requires a greater "keep-alive" current to maintain adequate

ionization. Remove one of the current-limiting resistors found in the "Halo-Light" power unit and replace it with one whose value measures about 20% lower.

In general, there will be some flickering, no matter how good the tube, at temperatures below 70 degrees F and above 85 degrees F. However, since the ambient temperature inside most cabinets lies in this range, there should be little trouble encountered on that score.

Yet another phenomenon which may draw complaints from the set-owner is a condition of intermittent firing or "blinking" of the tube. To clear this fault, the power unit must first be thoroughly checked. In some cases, this may require pulling the chassis. First, bridge the "HaloLight" brightness control with a clip lead. If the blinking continues, both current-limiting resistors should be checked by substitution. Some power units were provided with a switch, and this, also, should be temporarily bridged.

If the blinking persists, the gas tube itself should be inspected. Examine closely the plastic sleeving which fits over each end of the lamp. See Fig. 2. Minute cracks or punctures in the insulation are a sign of trouble, particularly when the light shield supporting the tube is made of metal. At any rate, detach the "HaloLight" and turn it on for a moment, holding it in your hand. There is no danger of shock if the lamp is gripped well back from its ends.

If the fault has disappeared, wind a few layers of cambric tape over the plastic sleeving before replacing the lamp in its light shield. But if the blinking persists, disconnect the lamp from its power unit and hold it up to the light. Look for a small blob of mercury rolling about as you jiggle the tube. If none is visible, tap both ends so that any mercury trapped around the electrodes will roll out. Persistent tapping and jarring should reveal at least one tiny drop of mercury; but if none appears, there is probably no appreciable surplus present. This, in turn, means that the "HaloLight" tube should be replaced; for there should always be visible a small surplus of mercury, no matter how warm the tube. As a matter of fact, when the lamp is manufactured, over ten times the required amount of mercury is injected, to ensure that a healthy surplus will always be present to prevent blinking and other related faults.

Occasionally, if a set-owner feels that his "HaloLight" is too dim, or too bright (some models are fixed), there is nothing wrong in changing the value of one of the current-limiting resistors in the power unit. The transformer is designed to take about a 20% increase in load. In lowering light levels by increasing fixed resistance, care must be taken that the current flow through the lamp is not restricted to the point where its "keep-alive" value is jeopardized. This, as observed earlier, would interfere with ionization and might result in an objectionable degree of flicker, if the tube has aged considerably. In general, however, there should be no problems.

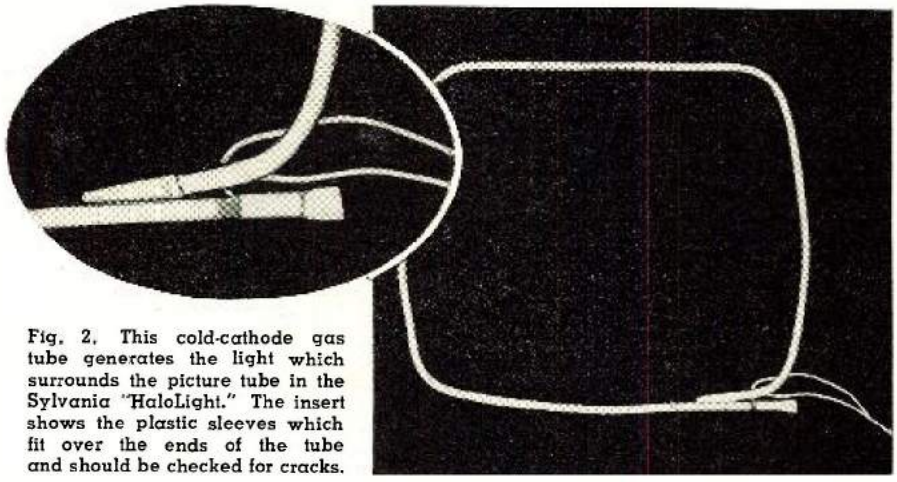


**Fig. 2. This cold-cathode gas tube generates the light which surrounds the picture tube in the Sylvania "HaloLight." The insert shows the plastic sleeves which fit over the ends of the tube and should be checked for cracks.**

In raising light levels by decreasing fixed resistance, care must be taken that the dissipation does not exceed the rating of the current-limiting resistors. Raising levels in variable "Halo-Light" models is not recommended, since the control would be vulnerable to higher currents. However, there has rarely been a complaint about any variable model being too dim in its "bright" position. On the other hand, sometimes someone feels that the dim position is too bright.

Unless the room temperature is up around 80 degrees F, "HaloLight" will sometimes flicker for several minutes after a set is turned on. Accordingly, all optical tests should be performed with the tube thoroughly warmed up, preferably by running it at maximum brightness for ten or fifteen minutes.

In removing and replacing "Halo-Light" tubes, the technician is cautioned against leaving smudges or dust of any kind on the light shield, tube, or mask. As a matter of fact, the mask and light shield should be washed in ordinary soap and water before the lamp is replaced. The slightest spot here would show up badly when the tube is on.

To gain access to the tube, it is rarely necessary to pull a chassis. The entire bezel assembly, which houses the gas tube and its power unit, may be removed from the cabinet and then temporarily replaced, so that the customer may operate his set while the lamp is being treated at the shop, or a new one ordered. There are no leads to untwist or cut, since the only electrical link with the chassis is a detachable plug.

When a "HaloLight" tube is being replaced, care should be taken that the mask and light shield fit tightly together. Otherwise, light may escape and shine on the picture tube face, causing an annoying, hazy glow along the edges of the screen.

Since this particular feature has proven popular with the public, service technicians can expect to encounter many sets which incorporate the "Halo-Light." Hence the importance of learning about its operation.

There have, of course, been cases in the past where service technicians have replaced "HaloLight" tubes unnecessarily, because of being on unfamiliar ground. However, if the foregoing procedure for troubleshooting is diligently adhered to, this undesirable situation should soon vanish.—30—

**Fig. 3. The various electrical components of the "HaloLight" feature are shown here.**